HOW TO Identify and Control Black Walnut Mycosphaerella Leaf Spot

United States Department of Agriculture

PREPARED BY
Forest Service
North Central Forest Experiment Station

This leaf-spot disease, caused by the fungus *Mycosphaerella juglandis*, attacks black walnut, *Juglans nigra*, and Persian walnut, *J. regia*. Thus far, the disease has been found in North Carolina, Georgia, Illinois, and Iowa. It is important in young walnut plantations, where it causes premature defoliation, thus reducing growth and nut production.

Affected walnut trees appear healthy with good foliage color until July. Then, from a distance, affected trees begin to look yellowish. Closer examination reveals leaf scorch, vein-pattern necrosis, and lesion fleck symptoms. Symptom-bearing leaves become increasingly chlorotic and by mid August may have dropped.

IDENTIFICATION

Leaf Symptoms

Leaf scorch. Look for killing of portions of leaves, particularly at the tips of the leaflets.

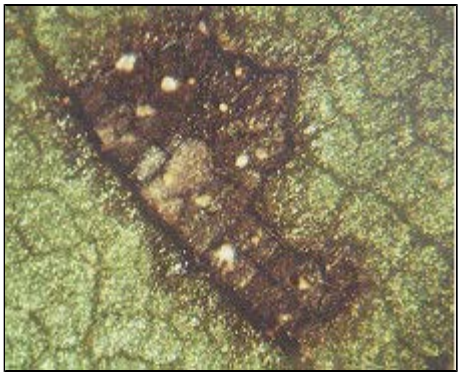
Fruiting Bodies and Spores

In July through September, look for: Pycnidia bearing conidiospores on undersurfaces of leaf spot lesions. Pycnidia become apparent about two weeks after lesions are first noticed. Pycnidia bearing spores are readily detected by the

Vein pattern Necrosis. Look for necrotic flecking among major leaf veins.

presence of white masses of oozing spores. In the absence of spore masses pycnidia are difficult to detect without a hand lens. They can be made more apparent by wetting the leaf to cause them to swell.

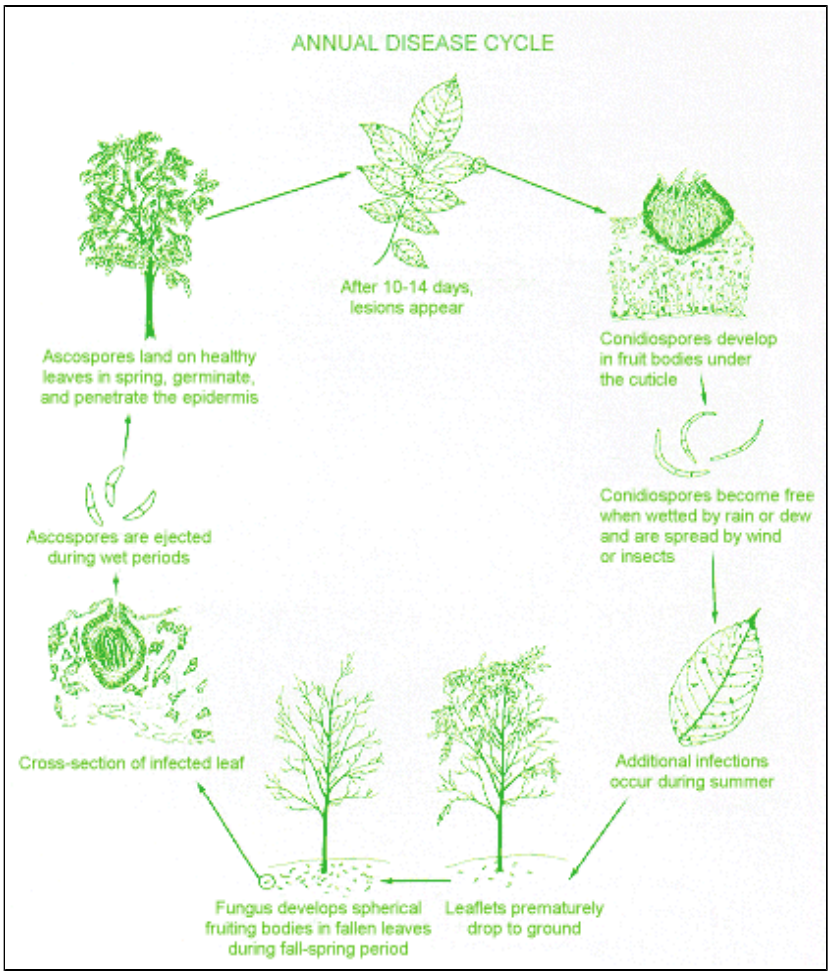
Leaf spotting. Look for angular-sided necrotic flecks up to 4 mm in diameter.



In the spring, look for: Perithecia on leaves and leaf fragments which bore lesions the previous summer and then dropped prematurely to the ground.

CONTROL

1. Mow or apply herbicides to reduce weed and grass competition around small seedlings. This reduces the high humidity around seedlings conducive to leaf infections.
2. On poor sites, apply nitrogenous fertilizers or interplant with nitrogen-fixing species to increase inherent leaf resistance to infection.
3. Apply the fungicide benomyl at least three times at 10-day intervals beginning the first week in July. Benomyl is not registered for application on walnuts grown for nut production.


ANNUAL DISEASE CYCLE
After 10-14 days, lesions appear
Conidiospores develop in fruit bodies under the cuticle
Conidiospores become free when wetted by rain or dew and are spread by wind or insects
Additional infections occur during summer
Leaflets prematurely drop to ground
Fungus develops spherical fruiting bodies in fallen leaves during fall-spring period
Cross-section of infected leaf
Ascospores are ejected during wet periods
Ascospores land on healthy leaves in spring, germinate, and penetrate the epidermis

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1985

U.S. GOVERNMENT PRINTING OFFICE: 1986—653-735 HT-65